e-ISSN 2985-3710
JOURNAL HYGEA PUBLIC HEALTH

Factors Related to The Incidence of Hypertension in The Elderly in The Coastal Area of Bintuhan Health Center Working Area, Kaur Regency

Septinawati [1], Fikitri Marya Sari [2], Julius Habibi [3]
[1,2,3] Program Studi Kesehatan Masyarakat, Fakultas Ilmu Kesehatan

Corresponding Author:
kesmasyunived@gmail.com

ARTICLE HISTORY
Received [20 December 2025]
Revised [07 March 2026]
Accepted [10 March 2026]

Keywords :
Hypertension, Dietary Patterns, Physical Acrivity, Obesty.

ABSTRACT

Intoduction: *Hypertension is one of the non-communicable diseases whose prevalence continues to rise in Indonesia, including in Kaur Regency. Lifestyle factors such as unhealthy eating patterns, lack of physical activity, and obesity are suspected to significantly contribute to the incidence of hypertension. This study aims to determine the relationship between dietary patterns, physical activity, and obesity with the incidence of hypertension in the community within the working area of Bintuhan Health Center, Kaur Regency.* Method: *This research uses a quantitative approach with a cross-sectional design. A sample of 96 respondents was taken through simple random sampling. Data were collected via questionnaires and blood pressure measurements, and analyzed using chi-square tests.* Result and Discussion: *The analysis results show a significant relationship between dietary patterns (p = 0.001), physical activity (p = 0.005), and obesity (p = 0.000) with the incidence of hypertension. Poor dietary patterns, low physical activity, and obesity status are associated with an increased risk of hypertension. Community-based promotional and preventive interventions need to be enhanced to reduce the burden of hypertension in the area*. Conclusion: *The health center is expected to strengthen education on healthy eating and lifestyle management for the elderly through a local cultural approach. Regular physical activity programs, such as elderly exercise classes, should be promoted, accompanied by regular monitoring of blood pressure and Body Mass Index (BMI). These preventive and promotional efforts are essential for the sustainable prevention and control of hypertension in coastal communities.*

INTRODUCTION

Data from the World Health Organization (WHO) in 2023 shows that the number of people with hypertension globally has reached 33%, meaning that 1 in 3 people in the world have hypertension. High blood pressure affects people of all ages. The number of people with high blood pressure continues to rise, with approximately 50 million (21.7%) adults in the United States having high blood pressure, Thailand 17%, Vietnam 34.6%, Singapore 24.9%, and Malaysia 29.9%. According to estimates, approximately 33% of the world's population is undiagnosed with hypertension. (WHO. 2023)

In Indonesia, hypertension or high blood pressure is the leading cause of death worldwide, with 90-95% of cases dominated by essential hypertension. In Indonesia, according to the 2023 Indonesian Health Survey (SKI) and the 2011-2021 non-communicable disease (NCD) cohort study, hypertension is the highest risk factor for the fourth leading cause of death, with a percentage of 10.2%.

The incidence of hypertension in Indonesia reaches 36%. According to the Indonesian Basic Health Research, the prevalence of hypertension is 34.1% (Indonesian Ministry of Health, 2023). According to the American Heart Association (AHA), 74.5 million Americans over the age of 20 suffer from hypertension, but the cause of nearly 95% of cases is unknown (WHO, 2023). The prevalence of diagnosed hypertension in people over the age of 18 by province in Indonesia (Kemenkes RI., 2018).

Hypertension is a disease with various causes. Various studies have proven various risk factors that influence the onset of hypertension. Previous studies have mentioned triggering factors for hypertension, such as gender and age. (Kartikasari, 2022).

The factors that cause hypertension can be divided into two categories: controllable factors and uncontrollable factors. Controllable factors are generally related to lifestyle and diet. Based on several sources obtained by the author, these factors include excessive fat consumption, lack of exercise, obesity, excessive salt consumption, smoking, alcohol consumption, and stress. Meanwhile, uncontrollable factors include genetics, gender, and age. (Suiraoka, 2022).

Physical activity is a series of muscle movements that produce energy from burning calories. Lack of physical activity increases the risk of high blood pressure due to an increased risk of becoming obese. Inactive people tend to have a faster heart rate and their heart muscles have to

work harder with each contraction. The harder and more frequently the heart has to pump, the greater the force exerted on the arteries. (Bianti Nuraini, 2021).

Obesity is an abnormal accumulation of body fat that can pose a risk to health. A person is considered obese if their weight exceeds the normal limit of >= 25 kg/m, measured using the Body Mass Index (WHO). In addition, obesity can also increase sodium reabsorption in the kidneys, which causes an increase in blood pressure.

Diet is a habit of consuming food and can be seen from the determination of a balanced diet/menu. A healthy diet is one that includes a balanced, varied, and proportional diet. Dietary factors can be seen from excessive sodium consumption. Consuming foods that are high in salt and salty foods can cause hypertension, which can lead to an increase in sodium in the blood, so that normal intracellular fluids are released to increase the amount of extracellular fluids, resulting in an increase in blood volume, which will lead to hypertension.

Hypertension is the number one disease in Indonesia, with a prevalence of 25.8% among people aged 18 years and older. In Bengkulu province, the prevalence of hypertension is 24%, with the highest prevalence in Central Bengkulu Regency at 75%, followed by Rejang Lebong at 53% and Kaur Regency at 29%. (Dinkes Prov. Bengkulu 2023).

Based on data from the Kaur District Health Office, in 2022 there were 16,248 cases of hypertension, and in 2023, there were 3,870 cases of hypertension, with the highest number in the Bintuhan Community Health Center Working Area with 223 patients. (Dinkes Kaur 2023).

According to preliminary survey results related to hypertension in the coastal areas of the Bintuhan Community Health Center Working Area in Kaur Regency, the community tends to consume foods that are high in fat and enjoy eating seafood. Their physical activity levels are generally low, with most elderly people staying at home, and most of these elderly people are obese.

RESEARCH METHODS

This study used a quantitative approach with a cross-sectional study design, in which risk factors and variables were observed simultaneously. The study was conducted in the coastal area of the Bintuhan Community Health Center in Kaur Regency. The study period was from July 10 to 22, 2025. The population in this study consisted of all elderly people in the working area of the Bintuhan Community Health Center in the coastal area of Kaur Regency, totaling 2,494 people. The sampling technique used was simple random sampling, in which each member or unit of the population had an equal chance of being selected as a sample. To determine the sample size from the population, the Slovin formula was used, resulting in a sample size of 96. This analysis aims to determine the relationship between independent and dependent variables using types and categories, so the analysis test used is the chi-square test. To see the statistical calculations, the significance limit or P value with α (0.05) is used.

RESULTS

Univariate analysis in research to examine the description of dependent and independent variables. The complete results of the univariate analysis are presented in the following table:

Tabel 1. Frequency Distribution

Variabel	Frequency (n)	Percentage
Dieraty Patterns		
Poor	51	53,1
Good	45	46,9
Phsical Activity		
Low	28	29,2
While	45	46,9
Weight	23	24
Obesity		
Obesity	39	40,6
Not Obesity	57	59,4
Hypertension		
Hypertension	41	42,7
Not Hypertension	55	57,3

Sumber: Data Diolah, 2025

e-ISSN 2985-3710
JOURNAL HYGEA PUBLIC HEALTH

Based on Table 1 above, it shows that some respondents have poor eating habits, amounting to 53.1% (51 people). Meanwhile, the physical activity column shows that some respondents have moderate physical activity, amounting to 45 (46.9 people). Obesity indicates that nearly half of the respondents are obese, accounting for 40.6% (39 respondents). Hypertension indicates that nearly half of the respondents have hypertension, accounting for 42.7% (41 people).

Bivariate analysis was performed to determine the relationship between independent variables and dependent variables using SPSS with a chi-square (X2) statistical test with a significance level (〈) of 5%. The complete bivariate analysis results can be seen in the table below:

Tabel 2. The Relation Between Dieraty Patterns and Hyperttension In The Elderly In The Coastal Area of Bintuhan Health Center Working Area, Kaur Regency

Dieraty Patterns	Hypertension				Total		X^2	P
	Hypertension		Not Hypertension					
	f	%	f	%	f	%		
Poor	30	58,8	21	41,2	51	100	10.185	0,001
Good	11	24,4	34	75,6	45	100		
Total	41	42,7	55	57,3	96	100		

Sumber: Data Diolah, 2025

Based on Table 2, it can be seen that of the 51 respondents who had poor eating habits, 30 (59.8%) respondents had hypertension. The results of the Chi-Square test (continuity correction) analysis show that the Chi-Square (χ^2) value is 10.185 with a p-value of 0.001 (p-value < α= 0.05), so it can be concluded that there is a significant relationship between diet and the incidence of hypertension in the coastal area of the Bintuhan Community Health Center.

Tabel 3. The Relation Between Phical Activity and Hyperttension In The Elderly In The Coastal Area of Bintuhan Health Center Working Area, Kaur Regency

Phsical Activity	Hypertension				Total		X^2	P
	Hypertension		Not Hypertension					
	f	%	f	%	f	%		
Low	19	67,9	9	32,1	28	100	10,775	0,005
While	16	35,6	29	64,4	45	100		
Weight	6	26,1	17	73,9	23	100		
Total	41	42,7	55	57,3	96	100		

Sumber: Data Diolah, 2025

Table 3 shows that of the 28 respondents who had low physical activity, 19 (67.9%) had hypertension. The results of the Chi-Square test (Pearson Chi Square) analysis show that the Chi-Square value (χ^2) is 10.775 with a p-value of 0.005 (p-value < α - 0.05), so it can be concluded that there is a significant relationship between physical activity and the incidence of hypertension in the coastal area of the Bintuhan Community Health Center.

Tabel 4. The Relation Between Obesity and Hyperttension In The Elderly In The Coastal Area of Bintuhan Health Center Working Area, Kaur Regency

Obesity	Hypertension				Total		X^2	P
	Hypertension		Not Hypertension					
	f	%	f	%	f	%		
Obesity	26	66,7	13	33,3	39	100	13.804	0.000
Not Obesity	15	26,3	42	73,7	57	100		
Total	41	42,7	55	57,3	96	100		

Sumber: Data Diolah, 2025

Based on Table 4 it can be seen that of the 39 obese respondents, 26 respondents (66.7%) had hypertension. The results of the Chi-Square test (continuity correction) analysis show that the Chi-Square (χ^2) value is 13.804 with a p-value of 0.000 (p-value < α - 0.05), so it can be concluded that there is a significant relationship between obesity and the incidence of hypertension in the coastal area of the Bintuhan Community Health Center.

DISCUSSION

The Relation Between Dieraty Patterns and Hyperttension In The Elderly In The Coastal Area of Bintuhan Health Center Working Area, Kaur Regency

The results showed that of the 51 respondents who had poor eating habits, 30 people (59.8%) had hypertension. Meanwhile, of the 45 respondents who had good eating habits, 17 people (37.8%) still had hypertension. These findings indicate that even if someone has good eating habits according to the questionnaire score, there is still a possibility of developing hypertension.

The chi-square test showed a p-value of 0.001, indicating a statistically significant relationship between dietary patterns and the incidence of hypertension among elderly people in the Bintuhan Community Health Center working area (because p < 0.05). This indicates that dietary patterns do have an influence on the incidence of hypertension, although there are some individuals with good dietary patterns who still experience hypertension, possibly due to other risk factors such as obesity or stress. The significant chi-square value shows that dietary patterns are a factor that needs to be considered in hypertension prevention and control programs, although it is not sufficient on its own without considering other accompanying factors.

These findings are in line with the results of Adawiyah's (2019) study, which states that consumption of foods high in fat and salt increases the risk of hypertension. In addition, research by Maulidah et al. (2020) also shows that older adults who do not maintain a healthy diet tend to have high blood pressure.

The Relation Between Phical Activity and Hyperttension In The Elderly In The Coastal Area of Bintuhan Health Center Working Area, Kaur Regency

The results showed that most elderly people had moderate physical activity, namely 45 people (46.9%), while only 10 people (10.4%) had heavy activity and 41 people (42.7%) had low activity. However, among respondents who had moderate and heavy physical activity, there were still elderly people who had hypertension.

This shows that even though the level of physical activity was moderate to heavy, hypertension could still occur. These findings do not fully support the theory that physical activity can lower blood pressure by increasing the efficiency of the heart and blood vessels. However, these results can be explained by the possibility that the activities performed were not intense enough or were not consistent over a long period of time, or because factors such as age, genetics, and stress still played a dominant role.

The chi-square test results showed a p-value of 0.005, which means that there is a significant relationship between physical activity and the incidence of hypertension in the elderly in the Bintuhan Community Health Center working area (because p < 0.05). This shows that physical activity is a factor that influences the blood pressure status of the elderly, although it is not the only determinant. The significance of this relationship is that elderly people with low physical activity tend to have a higher risk of developing hypertension compared to those with moderate or heavy physical activity.

These findings are in line with Savitri's (2016) research, which shows that older adults who engage in light physical activity tend to have higher blood pressure. Research by Putri et al. (2020) at the Tanjung Karang Community Health Center also found that respondents with low physical activity were 2.8 times more likely to have hypertension than those with moderate/heavy activity.

The Relation Between Obesity and Hyperttension In The Elderly In The Coastal Area of Bintuhan Health Center Working Area, Kaur Regency

The results of the study show that almost all respondents were obese, namely 39 people (40.6%). However, interestingly, there were also elderly people who were not obese but still had hypertension, as well as obese elderly people who did not show symptoms of hypertension. These findings confirm that obesity is indeed a major risk factor for hypertension, but it is not the only cause. There are other factors that can mediate or moderate this relationship, such as genetics, sodium intake, stress, sedentary lifestyle, or family history. This phenomenon does not contradict the theory, but rather reinforces that hypertension is a multifactorial disease, and obesity is only one of several major determinants.

The chi-square test results on the data show a p-value of 0.000, which means that there is a significant relationship between obesity and the incidence of hypertension in the elderly (because p < 0.05). Thus, it can be concluded that obesity statistically contributes to an increased risk of hypertension in the elderly group in the working area of the Bintuhan Community Health Center, Kaur Regency. This value indicates that elderly individuals with a body mass index (BMI) ≥ 25 are more likely to suffer from hypertension than elderly individuals with a normal BMI. This is in line with the physiological basis that excess body fat can increase cardiac output, vascular resistance, and stimulate the sympathetic nervous system and RAAS, all of which increase blood pressure.

These findings are reinforced by the results of a study by Maulidah et al. (2020), which showed that 42.3% of older adults were obese and that there was a significant relationship between obesity and the incidence of hypertension. They explained that being overweight increases the workload on the heart, blood volume, and peripheral resistance.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of research on "Factors Related to Hypertension in Elderly People in Coastal Areas within the Working Area of the Bintuhan Community Health Center, Kaur Regency," it can be concluded that there is a significant relationship between diet, physical activity, and obesity and the incidence of hypertension.

Based on the results of the study, the researchers recommend that community health centers optimize nutrition education and healthy lifestyles for older adults through a local cultural approach. Regular physical activity programs such as exercise for older adults, as well as regular blood pressure and BMI checks, should be implemented as preventive measures against hypertension.

REFERENCES

Anggraini, Annes Waren, Eduward Situmorang,Hendra Asputra, Sylvia Sagita Siahaan. 2019. *Faktor-faktor yang berhubungan dengan penyakit hipertensi*. Faculty of Medicine – University of Riau Pekanbaru, Riau.

Agnesia N K. 2022. *Faktor Risiko Hipertensi Pada Masyarakat Di Desa Kabongan Kidul, Kabupaten Rembang*. Semarang.

Ardiansyah. & Huriah, T. (2022). *Metode Massage Terhadap Tekanan Darah Pada Penderita Hipertensi*

Androgue. H.J. and Madias. N.E. 2017. *Sodium and Potassium in the Pathogenisis of* hypertension. The New England Journal of Medicine. 356:p1966-1978

Armilawaty. Husnul. A. dan Ridwan. A. 2012. *Hypertension dan Faktor Resikonya dalam Kajian Epidemiologi.* Bagian Epidemiologi FKM UNHAS. Makasar.

Ayu. E.S 2018. *Hypertensi.* http://egha_chan.wordpress.com/hipertensi/ Diakses: 6 Juli 2025. pukul 12.06 WIB

Center of Disease Control and Prevention (CDC). 2022. Taeniasis. Laboratory Indentification of parasite of public Health Concern.

Dochi. M. Sakata. K. Oishi. M. Tanaka. K. Kobayashi. E. and Suwazono. Y. 2019. *Smoking as an Independent Risk Factor for Hypertension: A 14-Year Longitudinal Study in Male Japanese Workers.* Tohoku J.Exp. Med. 217. p 37-43

Kartikasari, M.N.D. et al. (2022) *Kesehatan Mental*. Padang: PT Global Eksekutif Teknologi.

Kemenkes RI, 2019, *Profil Kesehatan Indonesia Tahun 2018*.

Padila. (2022). *Buku Ajar Keperawatan Medikal Bedah.* Yogyakarta: Nuha medika

Puji Hastuti, A. 2019 Hipertensi. (Lakeisha Anggota Ikapi,)

M N Bustan.2019. Epidemiologi Penyakit Tidak Menular. : Rineka Cipta. Jakarta.

Rahajeng. Ekowati. 2019. *Prevalensi Hipertensi dan Determinannya di Indonesia.* Pusat Penelitian Biomedis dan Farmasi Badan Penelitian Kesehatan Departemen Kesehatan RI. Jakarta

Ri, K. K. Penyakit Tidak Menular. (Kementrian Kesehatan Republik Indonesia, 2019).

Ruhyanudin, F. 2009. *Asuhan Keperawatan pada Klien dengan Gangguan Sistem Kardiovaskuler*. Cetakan 2. Universitas Muhammadiyah Malang. Malang.

Sayogo. S. 2009. *Hipertensi.* http: //repository .ui.ac.id/ contents/ koleksi/ 11/ 69d3bf7eae 2d4c62ecb2e31f1383d75ef3c37f7. pdf. Diakses: 29 Juli 2025.

Setiati, S, dkk. 2018. *Lima Puluh Masalah Kesehatan di Bidang Ilmu Penyakit Dalam*. Pusat Penerbitan Ilmu Penyakit Dalam FK UI. Jakarta

Shadine, M. 2010. *Mengenal Penyakit Hipertensi, Diabetes, Stroke, dan Serangan Jantung.* Cetakan Pertama. Keenbooks. Jakarta

Siahaan, B. 2010. *Pengaruh Persepsi Usila Tentang Posyandu Usila Terhadap Kejadian Pemanfaatan Posyandu Usila di Wilayah Kerja Puskesmas Martoba Kota Pematangsiantar Tahun 2010*. FKM USU. Medan.

Suiraoka, I. (2022). *Penyakit Degeneratif: Mengenal, Mencegah dan Mengurangi Faktor Risiko 9 Penyakit Degeneratif (Pertama).* Yogyakarta: Nuha Medika.

Wahyu Rahayu, 2015. *Mengenal dan Mencegah Penyakit Hipertensi.* Yogyakarta: Media Ilmu.

Yogiantoro M.2012. *Hipertensi Esensial* Buku Ajar Ilmu Penyakit Dalam Jilid I Edisi IV. FK UI. Jakarta.

Yunis Tri, dkk. *Blood Presure Survey Indonesia Norvask Epidemiology Study* Medika Jakarta. Volume XXXIX 2003; 4: 234-8.